

WHAT IS CLAIMED IS :

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1. A transmission-reflection type liquid crystal display device, comprising:

- a first transparent substrate;
- a second transparent substrate;
- a liquid crystal layer between the first transparent substrate and the second transparent substrate;
- a linear polarizer on the second transparent substrate;
- a circular polarizer on an outer side of the first transparent substrate; and
- a reflecting film on an inner side of the first transparent substrate adjacent to the liquid crystal layer, the reflecting film defining a light-transmitting region.

2. The transmission-reflection type liquid crystal display device of claim 1, further comprising:

- a $\lambda/4$ phase shift plate between the linear polarizer and the liquid crystal layer.

3. The transmission-reflection type liquid crystal display device of claim 1, wherein when a voltage is not impressed on the liquid crystal layer, the liquid crystal layer imparts a phase shift of $\lambda/4$ to light transmitted through the liquid crystal layer.

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4. The transmission-reflection type liquid crystal display device of claim 1, wherein the circular polarizer includes a right handed helical cholesteric liquid crystal having a range of pitch values of $(380\text{nm}-800\text{nm})/n$, where n

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is an average index of refraction of cholesteric liquid crystal.

5. The transmission-reflection type liquid crystal display device of claim 1, further comprising:

a color filter between the linear polarizer and the liquid crystal layer.

6. The transmission-reflection type liquid crystal display device of claim 1, further comprising:

a transparent common electrode between the linear polarizer and the liquid crystal layer.

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7. A transmission-reflection type liquid crystal display device, comprising:

a plurality of gate lines and data lines defining a plurality of pixels;

a transistor in each pixel, a gate of which is connected to a gate line and a second terminal of which is connected to a data line;

a reflecting film formed in each pixel and connected to a third terminal of the transistor in each pixel,

wherein a light-transmitting region through which light may pass exists between the gate line and the reflecting film in each pixel.

8. The transmission-reflection type liquid crystal display device of claim 7, wherein the light-transmitting region exists between a data line adjacent to the data line connected to the second terminal of the transistor and the reflecting film in each pixel.

9. The transmission-reflection type liquid crystal display device of claim 7, wherein the reflecting film overlaps the data line connected to the second terminal of the transistor in each pixel.

10. The transmission-reflection type liquid crystal display device of claim 7, wherein the reflecting film overlaps a gate line adjacent to the gate line connected to the gate of the transistor in each pixel.

11. A liquid crystal display device capable of transmitting light from a backlight and reflecting ambient light, comprising:

- a lower transparent substrate;
- an upper transparent substrate;
- a liquid crystal layer between the lower transparent substrate and the upper transparent substrate;
- a linear polarizer on the upper transparent substrate;
- a $\lambda/4$ phase shift plate between the linear polarizer and the liquid crystal layer; and
- a reflecting film for reflecting ambient light on the lower transparent substrate adjacent to the liquid crystal layer, the reflecting film defining a light-transmitting region for transmitting light from the backlight.

12. The liquid crystal display device of claim 11, wherein ambient light reflected from the reflecting film is selectively passed by the linear polarizer, depending on whether a voltage is applied across the liquid crystal layer.

13. The liquid crystal display device of claim 12, wherein the $\lambda/4$ phase shift plate induces a $\lambda/4$ phase shift in the reflected ambient light.

14. The liquid crystal display device of claim 11, wherein light from the backlight transmitted by the light-transmitting region is selectively passed by the linear polarizer, depending on whether a voltage is applied across the liquid crystal layer.

15. The liquid crystal display device of claim 14, wherein the $\lambda/4$ phase shift plate induces a $\lambda/4$ phase shift in the transmitted light from the backlight.

16. The liquid crystal display device of claim 11, further comprising:

a transparent common electrode between the linear polarizer and the liquid crystal layer for, in conjunction with the reflecting film, applying a voltage across the liquid crystal layer.

17. A liquid crystal display device capable of transmitting light from a backlight and reflecting light from a front of the device, comprising:

a polarizing layer;

a phase shifting layer adjacent to the polarizing layer;

a reflecting layer to reflect light from the front of the device, the reflecting film at least partially defining

a light-transmitting region through which light from the backlight may pass; and

a liquid crystal layer between the phase shifting layer and the reflecting layer.

18. The liquid crystal display device of claim 17, wherein the light reflected from the reflecting layer is selectively transmitted by the polarizing layer, depending on whether a voltage is applied across the liquid crystal layer.

19. The liquid crystal display device of claim 17, wherein light from the backlight transmitted by the light-transmitting region is selectively transmitted by the polarizing layer, depending on whether a voltage is applied across the liquid crystal layer.

20. The liquid crystal display device of claim 17, further comprising:

a transparent common electrode between the polarizing layer and the liquid crystal layer for, in conjunction with the reflecting film, applying a voltage across the liquid crystal layer.

21. The liquid crystal display device of claim 17, further comprising:

a first conducting line proximal to the reflecting layer, the first conducting line at least partially defining the light-transmitting region.

22. The liquid crystal display device of claim 21,
further comprising:

a second conducting line proximal to the reflecting layer, the second conducting line at least partially defining the light-transmitting region.

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